

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Substitute for form 1449/PTO

Complete if Known
Application Number **NEW APPLICATION**
Filing Date **HEREWITH**
First Named Inventor **Jennifer Ston -Sundberg**
Attorney Docket Number **1035-BI4281**

Sheet 1 of 3
(use as many sheets as necessary)

U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No. 1	U.S. Patent Document Number	Kind Code 2 (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
TS	AA	3,655,439		SEITER	04/11/1972	
	AB	3,658,586		WANG	04/25/1972	
	AC	3,796,597		V.R. PORTER, et al.	03/12/1974	
	AD	4,177,321		NISHIZAWA	12/04/1979	
	AE	5,741,724		RAMDANI, et al.	04/21/1998	
	AF	5,850,410		KURAMATA	12/15/1998	
	AG	5,530,267		BRANDLE, JR., et al.	06/25/1996	
	AH	6,104,529		BRANDLE, JR., et al.	08/15/2000	
	AI	3,883,313		CULLEN, et al.	05/13/1975	
	AJ	5,802,083		BIRNBAUM	09/01/1998	
TS	AK	2003/0007520	A1	KOKTA, et al.	01/09/2003	

FOREIGN PATENT DOCUMENTS

Examiner Initials *	Cite No. 1	Foreign Patent Document Office 3	Number	Kind Code 2 (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	TS
TS	AL	EP	0 148 656	A1	AUZEL, et al.	11/16/1984		<input type="checkbox"/>
	AM							<input type="checkbox"/>

PUBLICATIONS

Examiner Initials *	Cite No. 1	Title of Publication	Date of Publication of Cited Document MM-DD-YYYY
TS	AV	YUMASHEV K.V., et al., "Co ²⁺ -doped spinels saturable absorber Q-switches for 1.3-1.6 μ m solid state lasers", OSA TRENDS IN OPTICS AND PHOTONICS. ADVANCED SOLID STATE LASERS., Vol. 34, pp. 236-239, 2000. XP008017966	
	AW	YUMASHEV, K.V., et al., "Passive Q-switching of 1.34- μ m neodymium laser using Co ²⁺ :LiGa ₅ O ₈ and Co ²⁺ :MgAl ₂ O ₄ ", CONFERENCE DIGEST, 2000, 1 page. XP002242959	
	AX	OKTYABRSKY, S., et al., "Crystal structure and defects in nitrogen-deficient GaN", MRS Internet J. Nitride Semicond. Res, G6.43, pp. 1-6, 1999.	
	AY	KLEBER, W., et al., "Zur epitaxie von galliumnitrid auf nichtstochiometrischem spinell im system GaCl/NH ₃ /He", CRYSTAL RESEARCH AND TECHNOLOGY, Vol. 10, No. 7, pp. 747-758, 1975. (English Abstract)	
TS	AZ	SEIFERT, A., "Nachweis von stapelfehlern in GaN-epitaxieschichten mittels elektronenbeugung", CRYSTAL RESEARCH AND TECHNOLOGY, Vol. 10, No. 7, pp. 741-746, 1975. (English Abstract)	
Examiner Signature	/Timothy Speer/		Date Considered 06/28/2006

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Unique citation designation number. 2 See attached Kinds of U.S. Patent Documents. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

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TS	BA	6,533,874	B1	VAUDO, et al.	03/18/2003	
TS	BB	4,627,064		AUZEL, et al.	12/02/1986	
TS	BC	4,000,977		FALCKENBERG	01/04/1977	
	BD					
	BE					
	BF					
	BG					
	BH					
	BI					
	BJ					
	BK					

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	BL							<input type="checkbox"/>
	BM							<input type="checkbox"/>

PUBLICATIONS

Examiner Initials *	Cite No. 1	Title of Publication	Date of Publication of Cited Document MM-DD-YYYY
TS	BW	OHSATO, H., et al., "Epitaxial orientation and a growth model of (0 0 • 1) GaN thin film on (1 1 1) spinel substrate", JOURNAL OF CRYSTAL GROWTH, Vol. 189/190, pp. 202-207, 1998.	
	BX	YANG, H. -F., et al., "Microstructure evolution of GaN buffer layer on MgAl ₂ O ₄ substrate", JOURNAL OF CRYSTAL GROWTH, Vol. 193, pp. 478-483, 1998.	
	BY	DUAN, S., et al., "MOVPE growth of GaN and LED on (1 1 1) MgAl ₂ O ₄ ", JOURNAL OF CRYSTAL GROWTH, Vol. 189/190, pp. 197-201, 1998.	
TS	BZ	SHELDON, R., et al., "Cation Disorder and Vacancy Distribution in Nonstoichiometric Magnesium Aluminate Spinel, MgO • Al ₂ O ₃ ", J. AM. CERAM. SOC., Vol. 82, No. 12, pp. 3293-3298, 1999.	
Examiner Signature	/Timothy Speer/		Date Considered 06/28/2006

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Application Number NEW APPLICATION

Filing Date HEREWITH

First Named Inventor Jennifer Stone-Sundberg

Attorney Docket Number 1035-BI4281

Sheet 3 of 3

(use as many sheets as necessary)

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Examiner Initials *	Cite No. 1	Title of Publication	Date of Publication of Cited Document MM-DD-YYYY
TS	AAA	KULESHOV, N.V., et al. "Co-doped spinels: promising materials for solid state lasers", LONGER WAVELENGTH LASERS AND APPLICATIONS, Vol. 2138, pp. 175-182, 1994. XP008017848	
	AAB	KULESHOV, N.V., et al., "Absorption and luminescence of tetrahedral Co ²⁺ ion in MgAl ₂ O ₄ , Vol. 55, no. 5-6, pp. 265-269, 1993. XP008017849	
	AAC	NIKISHIN, S.A., et al., "Gas source molecular beam epitaxy of GaN with hydrazine on spinel substrates", APPLIED PHYSICS LETTERS, Vol. 72, No. 19, pp. 2361-2363, 1998. XP000755963	
	AAD	HAISMA, et al., "Lattice constant adaptable crystallographics", JOURNAL OF CRYSTAL GROWTH, Vol. 102, pp. 979-993, 1990. XP002260056	
	AAE	TAMURA, K., et al., "Epitaxial growth of ZnO film on lattice-matched ScAlMgO ₄ (0001) substrates", JOURNAL OF CRYSTAL GROWTH, Vol. 214-215, pp. 59-62, 2000. XP004200964	
	AAF	WYON, et al., "Czochralski growth and optical properties of magnesium-aluminum spinel doped with nickel", JOURNAL OF CRYSTAL GROWTH, Vol. 79, pp. 710-713, 1986. XP002250057	
	AAG	TSUCHIYA, T., et al. "Epitaxial growth of InN films on MgAl ₂ O ₄ (1 1 1) substrates", JOURNAL OF CRYSTAL GROWTH, Vol. 220, pp. 185-190, 2000.	
	AAH	KURAMATA, Akito, et al., "High-quality GaN epitaxial layer grown by metalorganic vapor phase epitaxy on (111) MgAl ₂ O ₄ substrate", APPL. PHYS. LETT., Vol. 67, No. 17, pp. 2521-2523, 1995.	
	AAI	MITCHELL, T., "Dislocations and Mechanical Properties of MgO- MgAl ₂ O ₃ spinel single crystals", J. AM. CERAM. SOC., Vol. 82, No. 12, pp. 3305-3316, 1999.	
	AAJ	HELLMAN, E., "Exotic and Mundane substrates for gallium nitride heteroepitaxy", BELL LABORATORIES, THC2, Murray Hill, NJ.	
	AAK	KRUGER, M.B., et al., "Equation of state of MgAl ₂ O ₄ spinel to 65 GPa", THE AMERICAN PHYSICAL SOCIETY, Vol. 56, No. 1, pp. 1-4, 1997.	
	AAL	KURAMATA, A., et al., "Properties of GaN epitaxial layer grown on (111) MgAl ₂ O ₄ substrate", SOLID-STATE ELECTRONICS, Vol. 41, No. 2, pp. 251-254, 1997.	
TS	AAM	GRITSYNA, V., et al., "Structure and Electronic states of defects in spinel of different compositions MgO · n MgAl ₂ O ₃ · Me", J. AM. CERAM. SOC. Vol. 82, No. 1, pp. 3365-3373, 1999.	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Substitute for form 1449A/PTO

Sheet 1 of 1
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Complete if Known
Application Number 10/668,610
Filing Date September 23, 2003
First Named Inventor Jennifer Ston -Sundberg
Group Art Unit
Examiner Name
Attorney Docket Number 1035-BI4281

U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No.1	U.S. Patent Document Number	Kind Code 2 (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
TS	AA	4,493,720		Gauthier, et al.	01/15/1995	
	AB	5,644,400		Mundt	07/01/1997	
	AC	5,768,335		Shahid	06/16/1998	
	AD	5,825,913		Rostami, et al.	10/20/1998	
	AE	5,822,213		Huynh	10/13/1998	
	AF	6,021,380		Fredriksen, et al.	02/01/2000	
TS	AG	4,819,167		Cheng, et al.	04/04/1989	
	AH					
	AI					
	AJ					

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	AK							<input type="checkbox"/>
	AL							<input type="checkbox"/>
	AM							<input type="checkbox"/>
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PUBLICATIONS

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	AX		
	AY		
	AZ		

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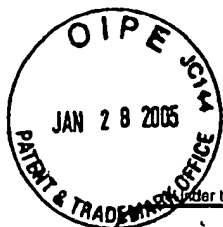
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LIST OF RELATED APPLICATIONS

<u>Application No.</u>	<u>Filing Date</u>	<u>Applicant(s)</u>	<u>Docket No.</u>
TS 10/669,141	09/23/03	Kokta, et al.	1035-BI4282
TS 10/669,135	09/23/03	Kokta, et al.	1035-BI4307
TS 10/669,145	09/23/03	Kokta, et al.	1035-BI3918-CIP

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PTO/SB/08A (08-03)

Approved for use through 07/31/2008. OMB 0651-0031

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet

1

of

3

Complete if Known

Application Number	10/668,610
Filing Date	September 23, 2003
First Named Inventor	Jennifer Stone-Sundberg
Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1035-BI4281

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
TS ↓ ↓ ↓ ↓	AA	US- 4,963,520	10/16/1990	Yoo, et al.	
	AB	US- 5,982,796	11/09/1999	Kokta, et al.	
	AC	US- 5,654,973	08/05/1997	Stultz, et al.	
	AD	US- 5,557,624	09/17/1996	Stultz, et al.	
	AE	US- 6,366,596	04/02/2002	Yin, et al.	
TS	AF	US- 6,023,479	02/08/2000	Thony, et al.	
	AG	US-			
	AH	US-			
	AI	US-			
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	AQ	US-			
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		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	AT					
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	AV					
	AW					
	AX					
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This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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		Application Number	10/668,610
		Filing Date	September 23, 2003
		First Named Inventor	Jennifer Stone-Sundberg
		Art Unit	1775
		Examiner Name	Stephen J. Stein
Sheet 2	of 3	Attorney Docket Number	1035-BI4281

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
TS	BA	Efimov, A.N., et al., "Onan Unusual Azimuthal Orientation Relationship in the System Gallium Nitride Layer on Spinel Substrate", CRYSTALLOGRAPHY REPORTS, 45(2): 312-317 (2000).	
	BB	Sun C.J., et al., "Mg-doped green light emitting diodes over cubic (1 1 1) MgAl ₂ O ₄ substrate", APP. PHYS. LETT. 72(19): 2361-2363 (1998).	
	BC	Efimov, A.N., et al., "Symmetry constraints and epitaxial growth on non-isomorphic substrate", THIN SOLID FILMS 260: 111-117 (1995).	
	BD	George, T., et al., "Novel symmetry in the growth of gallium nitride on magnesium aluminate substrates", APPL. PHYS. LETT. 68(3): 337-339 (1996).	
	BE	Sun C.J., et al., "Deposition of high quality wurtzite GaN films over cubic (1 1 1) MgAl ₂ O ₄ substrates using low pressure and metalorganic chemical vapor deposition, " APPL. PHYS. LETT. 68(8): 1129-1131 (1996).	
	BF	Nakamura, S., et al., "Characteristics of InGaN multi-quantum-well-structure laser diodes, " APPL. PHYS. LETT. 68(23): 3269-3271 (1996).	
	BG	Khan, M.A., et al., "Cleaved cavity optically pumped InGaN-GaN laser grown on spinel substrates," APPL. PHYS. LETT. 69(16): 2418-2420 (1996).	
	BH	Tempel, A., et al., "Nachweis von Stapelfehlern in GaN-Exitaxieschichten mittels Elektronenbeugung," KRISTALL UND TECHNIK 10(7): 741-746 (1975).	
↓	BI	Tempel, A., et al., "Zur Epitaxie von Galliumnitride auf nichtstoechiometrischem Spinell im System GaC1/NH3/He, " KRISTALL UND TECHNIK 10(7): 747-758 (1975)	
TS	BJ	K.V. Yumashev, "Saturable absorber Co ²⁺ : MgAl ₂ O ₃ crystal for Q switching of 1.34-um Nd ³⁺ : YAlO ₃ and 1.54-um Er ³⁺ : glass lasers," APPLIED OPTICS 38(30): 6343-6346 (1999).	

Examiner Signature	/Timothy Speer/	Date Considered	06/28/2006
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Sheet 3 of 3

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TS	CA	Camargo, M.B., et al., "Co2+ Y3Sc2Ga3O12 (YSGG) Passive Q-Switch for Infrared Erbium Lasers," submitted to LEOS in 1994.	
	CB	Mikhailov, V.P., et al., "Passive Q-switch performance at 1.3u (1.5u) and nonlinear spectroscopy of Co2+: MgAl2O4 and Co2+: LaMgAl11O9 crystals," OSA TOPS VOL. 26 Advanced Solid-State Lasers, pp. 317-324 (1999).	
	CC	Stulz, R.D., et al., "Divalent Uranium and Cobalt Saturable Absorber Q-Switches at 1.5um," OSA Proceedings on Advanced Solid-State Lasers, 24:460-464 (1995).	
	CD	Birnbaum, M., et al., "Co2+: ZnSe Saturable Absorber Q-Switch for the 1.54 Um Er3+: Yb3+: Glass Laser," OSA TOPS Vol. 10 Advanced Solid State Lasers, pp. 148-151 (1997).	
	CE	Machida, H., et al., "difficulties encountered during the Czochralski growth of TiO2 single crystals," JOURNAL OF CRYSTAL GROWTH, 112: 835-837 (1997).	
	CF	Camargo, M.B., et al., "Broad-band 1.54 um Saturable Absorber Q-switch with Co2+," submitted to ASSL in 1995.	
TS	CG	Yumashev, K.V., et al., "Nonlinear spectroscopy and passive Q-switching operation of a Co2+: LaMgAl11O19 crystal," J. OPT. SOC. AM. B., 16(12): 2189-2194 (1999).	
	CH		
	CI		
	CJ		

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Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1035-BI4281

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TS	AA	US- 3,625,868	12/07/1971	Grabmaier et al.	
↓	AB	US- 3,736,158	05/29/1973	Cullen et al.	
	AC	US- 3,816,906	06/18/1974	Falckenberg	
	AD	US- 3,883,313	05/13/1975	Cullen et al.	
	AE	US- 3,885,978	05/27/1975	Doi et al.	
	AF	US- 3,990,902	11/09/1976	Nishizawa, et al.	
	AG	US- 3,950,504	04/13/1976	Belding et al.	
	AH	US- 4,370,739	01/25/1983	Wang et al.	
	AI	US- 4,755,314	07/05/1988	Sakaguchi et al.	
	AJ	US- 5,138,298	08/11/1992	Shino	
	AK	US- 5,850,410	12/15/1998	Kuramata	
	AL	US- 6,533,874 B1	03/18/2003	Vaudo et al.	
	AM	US- 2003/0188678 A1	10/09/2003	Kokta et al.	
	AN	US- 6,839,362 B2	01/05/2005	Kokta et al.	
	AO	US- 6,844,084 B2	01/18/2005	Kokta et al.	
TS	AP	US- 3,424,955	01/28/1969	Seiter et al.	
	AQ	US-			
	AR	US-			
	AS	US-			

FOREIGN PATENT DOCUMENTS

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ² *Number ⁴ *Kind Code ⁵ (if known)				
TS	AT	FR 1,471,976	03/24/1966	Siemens Aktiengesellsc.	Corr. 3,424,955	
↓	AU	JP 11-157997	06/15/1999	Kyocera Corporation	Abstract Only	
	AV	JP 09-278595	10/28/1997	Sumitomo Elect. Ind. Ltd.	Abstract Only	
	AW	JP 62-188325	08/17/1987	Sumitomo Elect. Ind. Ltd.	Abstract Only	
	AX	JP 58-211736	12/09/1983	Toshiba Corporation	Abstract Only	
TS	AY	JP 07-307316	11/21/1995	Sumitomo Elect. Ind. Ltd.	Abstract Only	

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Signature**

/Timothy Speer/

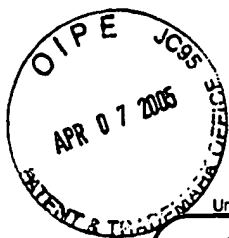
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known

Application Number	10/668,610
Filing Date	September 23, 2003
First Named Inventor	Jennifer Stone-Sundberg
Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1035-BI4281

Sheet 2 of 3

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	BA	US-			
	BB	US-			
	BC	US-			
	BD	US-			
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	BK	US-			
	BL	US-			
	BM	US-			
	BN	US-			
	BO	US-			
	BP	US-			
	BQ	US-			
	BR	US-			
	BS	US-			

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		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
TS	BT	EP 0 762 930 B1	07/12/2000	BP Amoco Corporation		
↓	BU	EP 0 263 171 B1	11/25/1992	UOP		
↓	BV	WO 01/99155 A2	12/27/2001	Nichia Corporation		
TS	BW	WO 02/95887 A2	11/28/2002	SG Ceramics & Plastics Inc.		
	BX					
	BY					

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Signature

/Timothy Speer/

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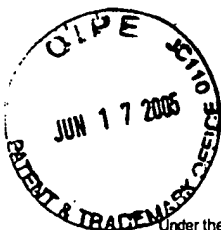
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		Complete if Known	
		Application Number	10/668,610
		Filing Date	September 23, 2003
		First Named Inventor	Jennifer Stone-Sundberg
		Art Unit	1775
		Examiner Name	Stephen J. Stein
Sheet 3	of 3	Attorney Docket Number	1035-BI4281

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
TS	CA	Giess et al., "Growth of Single Crystal MgGa ₂ O ₄ Spinel", IBM TECHNICAL DISCLOSURE BULLETIN, Vol. 15, no. 1, June 1972, pgs 151-152, XP-002315746.	
	CB	Anon., "Spinel Crystals for Electronic Devices", MANUFACTURING TECHNOLOGY NOTE, Vol. NTN-77, no. 0735, April 1977, XP-002315747.	
	CC	Grabmaier et al., "Czochralski Growth of Magnesium-Aluminum Spinel", J. AMERICAN CERAMIC SOCIETY, Vol. 51, no. 6, June 1968, pgs 355-356, XP-002315185.	
	CD	Wyon et al., "Czochralski Growth and Optical Properties of Magnesium-Aluminum Spinel Doped with Nickel", JOURNAL OF CRYSTAL GROWTH, NORTH-HOLLAND PUBLISHING CO. AMSTERDAM, NL, Vol. 79, no. 1-3, part 2, 1986, pgs 710-713, XP-002250057.	
	CE	Pinckney, L.R., "Transparent, high strain point spinel glass-ceramics", JOURNAL OF NON-CRYSTALLINE SOLIDS, Vol. 255, pp. 171-177, 1999.	
	CF	Nakamura, S. "Current Status and Future Prospects of InGa _N -Based Laser Diodes", ISAP INTERNATIONAL, Vol. 1, pgs. 5-17, 2000.	
	CG	Kisailus D., et al., "Growth of Epitaxial GaN of LiGaO ₂ Substrates Via a Reaction With Ammonia", J. MATER. RES., Vol. 16, no. 7, pgs 2077-2081, 2001.	
	CH	Nakamura, S., et al., "InGa _N MQW LDs Grown on MgAl ₂ O ₄ Substrates," In THE BLUE LASER DIODE, (NY: Springer-Verlag), pp. 233-243, 1997 (update included).	
TS	CI	Mordoc, H., et al., "Large-band-gap SiC, III-V nitride, and II-VI ZnSe-based Semiconductor Device Technologies", J. APPL. PHYS., Vol. 76, no. 3, pgs 1363-1398, 1994.	
	CJ		

Examiner Signature	Date Considered
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1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet 1 of 1

Complete if Known

Application Number	10/668,610
Filing Date	September 23, 2003
First Named Inventor	Jennifer Stone-Sundberg
Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1035-BI4281

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
TS ↓	A	US- 3,808,065	04-30-1974	Robinson, et al.	
	B	US- 3,898,051	08-05-1975	Schmid	
	C	US- 4,347,210	08-31-1982	Maguire, et al.	
TS	D	US- 5,968,267	10-19-1999	Li	
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	F	US-			
	G	US-			
	H	US-			
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	M	US-			
	N	US-			
	O	US-			
	P	US-			
	Q	US-			
	R	US-			
	S	US-			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁴
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
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	U					
	V					
	W					
	X					
	Y					

Examiner Signature	/Timothy Speer/	Date Considered	06/28/2006
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet 1 of 1

Complete if Known

Application Number	10/668,610
Filing Date	September 23, 2003
First Named Inventor	Jennifer Stone-Sundberg
Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1035-BI4281

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
TS	A	US- 6,848,434 B2	01/25/2005	Akselrod	
TS	B	US- RE38,488 E	04/06/2004	Thony et al.	
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		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet **I** of **13****Complete if Known**

Application Number	10/668,610
Filing Date	09/23/2003
First Named Inventor	Jennifer Stone-Sundberg
Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1075-BI4281

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		Number-Kind Code ² (if known)			
TS	A1	US- 3,753,775	08/21/1973	Robinson et al.	
	B1	US- 3,964,942	06/22/1976	Berkenblit et al.	
	C1	US- 4,649,070	03/10/1987	Kondo et al.	
	D1	US- 4,657,754	04/14/1987	Bauer et al.	
	E1	US- 5,643,044	07/01/1997	Lund	
	F1	US- 5,742,026	04/21/1998	Dickinson, Jr. et al.	
	G1	US- 5,989,301	11/23/1999	Laconto, Sr. et al.	
	H1	US- 6,048,577	04/11/2000	Garg	
	I1	US- 6,238,450 B1	05/29/2001	Garg et al.	
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TS	T1	CN 1291795	04/18/2001	Guanglei Sci & Tech Co. Ltd.	English Abstract Only	
	U1	CN 1379484	11/13/2002	Univ Qinghua	English Abstract Only	
	V1	CN 1469459	01/21/2004	Fudi Elect. Mat. Co. Ltd.	English Abstract Only	
	W1	CN 1476046	02/18/2004	Shanghai Prec. Opt. Instr	English Abstract Only	
	X1	CN 1476047	02/18/2004	Shanghai Prec. Opt. Instr	English Abstract Only	
TS	Y1	EP 997445	05/03/2000	Corning Inc.	English Abstract Only	

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Signature

/Timothy Speer/

Date
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Sheet 2 of 13

Application Number	10/668,610
Filing Date	09/23/2003
First Named Inventor	Jennifer Stone-Sundberg
Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1075-B14281

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		Number-Kind Code ² (if known)			
TS	A2	US- 2003/0213950 A1	11/20/2003	Hwang	
↓	B2	US- 2004/0063236 A1	04/01/2004	Kwak et al.	
	C2	US- 2004/0089220 A1	05/13/2004	Kokta et al.	
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	E2	US-			
	F2	US-			
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TS	T2	EP 1298709	04/02/2003	NGK Insulators Ltd.	English Abstract Only	
↓	U2	EP 1394867	03/03/2004	Samsung Elect. Co. Ltd.	English Abstract Only	
	V2	JP 53-043481	04/19/1978	Matsushita Elec Ind. Co. Ltd.	English Abstract Only	
	W2	JP 79-026873	09/06/1979	Nippon Elect. Co.	English Abstract Only	
	X2	JP 58-090736	05/30/1983	Tokyo Shibaura Elect. Co	English Abstract Only	
	TS	Y2	JP 61-142759	06/30/1986	NGK Spark Plug Co. Ltd.	English Abstract Only

**Examiner
Signature**

/Timothy Speer/

Date	
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Application Number	10/668,610
Filing Date	09/23/2003
First Named Inventor	Jennifer Stone-Sundberg
Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1075-BI4281

Sheet 3 of 13

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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TS	A3	US-			
	B3	US-			
	C3	US-			
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	O3	US-			
	P3	US-			
	Q3	US-			
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	S3	US-			

FOREIGN PATENT DOCUMENTS

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		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
TS	T3	JP 62-123059	06/04/1987	Narumi Seito KK	English Abstract Only	
	U3	JP 7-235692	09/05/1995	Sony Corp.	English Abstract Only	
	V3	JP 8-040797	02/13/1996	Kyocera Corp.	English Abstract Only	
	W3	JP 8-083802	03/26/1996	Shingijutsu Kigyodan	English Abstract Only	
	X3	JP 8-095233	04/12/1996	Tono Seiki YG	English Abstract Only	
TS	Y3	JP 9-129651	05/16/1997	Hewlett-Packard Co.	English Abstract Only	

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Sheet 4

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TS	T4	JP 9-129928	05/16/1997	Toshiba KK	English Abstract Only	
	U4	JP 11-195813	07/21/1999	Toshiba Denshi Eng. KK	English Abstract Only	
	V4	JP 11-235659	08/31/1999	Ricoh KK	English Abstract Only	
	W4	JP 11-274559	10/08/1999	Sanyo Elect. Co. Ltd.	English Abstract Only	
	X4	JP 2000-228367	08/15/2000	Samsung Elect. Co. Ltd.	English Abstract Only	
TS	Y4	JP 2000-331940	11/30/2000	Sony Corp.	English Abstract Only	

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		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
TS	T5	JP 2001-010898	01/16/2001	NEC Corp.	English Abstract Only	
	U5	JP 2001-198808	07/24/2001	Morioka Seiko Kogyo KK	English Abstract Only	
	V5	JP 2001-220295	08/14/2001	Namiki Seimitsu Hoseki KK	English Abstract Only	
	W5	JP 2001-253800	09/18/2001	Namiki Seimitsu Hoseki KK	English Abstract Only	
	X5	JP 2002-012856	01/15/2002	Neos KK	English Abstract Only	
TS	Y5	JP 2002-050577	02/15/2002	Namiki Seimitsu Hoseki KK	English Abstract Only	

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	P6	US-			
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TS	T6	JP 2002-158377	05/31/2002	Matsushita Denki Sangyo KK	English Abstract Only	
	U6	JP 2002-255694	09/11/2002	Kyocera Corp.	English Abstract Only	
	V6	JP 2002-353425	12/06/2002	Kyocera Corp.	English Abstract Only	
	W6	JP 2003-045829	02/14/2003	Hitachi Chem Co. Ltd.	English Abstract Only	
	X6	JP 2003-113000	04/18/2003	Hitachi Cable Ltd.	English Abstract Only	
TS	Y6	JP 2003-124151	04/25/2003	Disco KK	English Abstract Only	

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Examiner Name	Stephen J. Stein
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TS	T7	JP 2003-165042	06/10/2003	Okamoto Kosaku Kikai Seisakusho KK	English Abstract Only	
	U7	JP 2003-273022	09/26/2003	Namiki Seimitsu Hoseki KK	English Abstract Only	
	V7	JP 2003-320521	11/11/2003	Tokyo Tungsten KK	English Abstract Only	
	W7	JP 2003-334754	11/25/2003	Nippon Microcoating KK	English Abstract Only	
	X7	JP 2003-338638	11/28/2003	Nichia Kagaku Kogyo KK	English Abstract Only	
TS	Y7	JP 2004-006867	01/08/2004	Matsushita Denki Sagyo KK	English Abstract Only	

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TS	T8	JP 2004-014691	01/15/2004	Mitsubishi Gas Chem Co Inc.	English Abstract Only	
	U8	JP 2004-140394	05/13/2004	Nissan Chem Ind. Ltd.	English Abstract Only	
	V8	KR 2002-043128	06/08/2002	Ulsan College	English Abstract Only	
	W8	SU 1781271	12/15/1992	Krasy Poly (Kypo)	English Abstract Only	
	X8	TW 550836	09/01/2003	Ind. Tech. Res. Inst.	English Abstract Only	
TS	Y8	WO 2000/68332	11/16/2000	MPM Ltd.	English Abstract Only	

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	N9	US-			
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	P9	US-			
	Q9	US-			
	R9	US-			
	S9	US-			

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TS	U9	WO 2004/33769	04/22/2004	Unisearch Ltd.	English Abstract Only	
	V9				English Abstract Only	
	W9				English Abstract Only	
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if Known

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	Application Number		10/668,610		
	Filing Date		09/23/2003		
	First Named Inventor		Jennifer Stone-Sundberg		
	Art Unit		1775		
	Examiner Name		Stephen J. Stein		
Sheet	10	of	13	Attorney Docket Number	1075-BI4281

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
TS	A10	Aeschlimann, R. et al., "The Chemical Polishing of Magnesium Aluminate Spinel in Pyrophosphoric Acid", MAT. RES. BULL., Vol. 5, pgs 167-172, 1970.	
	B10	Dwikusuma, F., "Study on Sapphire Surface Preparation for III-Nitride Heteroepitaxial Growth by Chemical Treatments", JOURNAL FOR ELECTROCHEMICAL SOC., Nov. 2002, 30 pgs.	
	C10	Kim, S. et al., "Stress Relaxation in Thick-Film GaN Grown by Hydride Vapor Phase Epitaxy on Sapphire and Spinel Substrates as Studied by Photoluminescence and Raman Spectroscopy", J. OF THE KR PHYS SOC., Vol. 34, No. 2, Feb. 1999, pgs 163-167.	
	D10	Kurobe, Toshiji, et al., "Magnetic Field-Assisted Lapping", BULL. JAPAN SOC. OF PREC. ENGG., Vol. 20, No. 1, March 1986, pgs 49-51.	
	E10	Libowitzky, E., "Optical Anisotropy in the Spinel Group: a Polishing Effect", EUR. J. MINERAL., Vol. 6, 1994, pgs. 187-194.	
	F10	Reisman, A., et al., "The Chemical Polishing of Sapphire and MgAl Spinel", J. ELECTROCHEM. SOC.: SOLID STATE SCIENCE, Vol. 118, No. 10, October 1971, pgs 1653-1657.	
	G10	Richter, F., et al., "Herstellung und Aurichtung Von MgAl-Spinell-Substraten fur die Halbleiterepitaxie", KRISTALL UND TECHNIK, Vol. 10, No. 3, 1975, pgs 33-348.	
	H10	Robinson, P., et al., "The Chemical Polishing of Sapphire and Spinel", RCA REVIEW, Vol. 34, December 1973, pgs 616-629.	
↓	I10	Roy, D., et al., "Spinel, Where did it go?", SPIE Vol. 3134, pgs 307-316.	
TS	J10	Wang, C., et al., "Growth and Characterization of Spinel Single Crystal for Substrate Use in Integrated Electronics", J. APPLIED PHYSICS, Vol. 40, No. 9, August 1969, pgs 3433-3444.	

Examiner Signature	/Timothy Speer/	Date Considered	06/28/2006
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Sheet	11	of	13	Application Number	10/668,610
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				Art Unit	1775
				Examiner Name	Stephen J. Stein
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TS	A11	Yanina, S., et al., "Moving Steps and Crystal Defects on Spinel Surfaces", MAT. RES. SOC. SYMP., Vol. 620, 2000, pgs M9.4.1-M9.4.6.	
	B11	Byun, D., et al., "Reactive ion (N2+) Beam Pretreatment of Sapphire for GaN Growth", THIN SOLID FILMS, Vol. 326, 1998, pgs 151-153.	
	C11	Byun, D., et al., "New Pretreatment Method of Sapphire for GaN Deposition", PHYS. STAT. SOL., Vol. 176, 1999, pgs 643-648.	
	D11	Sung, Y., et al., "High Rate Etching of Sapphire Wafer Using Cl2BCl3Ar Inductively Coupled Plasmas", MAT. SCI. & ENG.: SOLID STATE MAT, Vol. B82, No. 1-3 2000, pgs 50-52. (ABSTRACT ONLY)	
	E11	Wang, X., et al., "Chemical Polishing of Sapphire for Growth of GaN", CHINESE JOURNAL OF SEMICONDUCTORS, Vol. 18, No. 11, pgs 867-871, 1997. (ABSTRACT ONLY)	
	F11	Lee, J., et al., "Scribing and Cutting a Blue LED Wafer Using a Q-Switched Nd:YAG Laser", APPLIED PHYSICS, Vol. 70, No. 5, pgs 561-564, 2000. (ABSTRACT ONLY)	
	G11	Kalinski, Z., "Preparation of Sapphire Substrates for Gas Phase GaN Epitaxial Processes", KRISTAL UND TECHNIK, Vol. 12, No. 10, pgs 1105-1110, 1977. (ABSTRACT ONLY)	
	H11	Jeong, C., et al., "Sapphire Etching with BCl3/HBr/Ar Plasma", SURFACE & COATINGS TECHNOLOGY, Vol. 171, No. 1-3, 2003, pgs 280-284. (ABSTRACT ONLY)	
↓	I11	Kalinski, Z., et al., "Structural Etching of Al2O3 Substrate Plates Applied in Gaseous Epitaxy of GaN Layers", ELEKTRONIKA, Vol. 18, No. 3, 1977, pgs 117-119. (ABSTRACT ONLY)	
TS	J11	Lakew, B., et al., "High Tc Superconducting Bolometer on Chemically Etched 7 Micrometer Thick Sapphire", NASA, 1997, 21 pgs. (ABSTRACT ONLY)	

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				Filing Date	09/23/2003
				First Named Inventor	Jennifer Stone-Sundberg
				Art Unit	1775
				Examiner Name	Stephen J. Stein
Sheet	12	of	13	Attorney Docket Number	1075-BI4281

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TS	A12	Jeong, C., et al., "Dry Etching of Sapphire Substrate for Device Separation in Chlorine-Based Inductively Coupled Plasmas", MAT. SCI. & ENG.: SOLID STATE MATERIALS, Vol. 93, No. 1-3, pgs 60-63, 2002. (ABSTRACT ONLY)	
	B12	Gu, E., et al., "Micromachining and Dicing of Sapphire, Gallium Nitride and Micro LED Devices with UV Copper Vapour Laser", THIN SOLID FILMS, Vol. 453-454, pgs 462-466, 2000. (ABSTRACT ONLY)	
	C12	Park, H., et al., "A Novel Process for the Generation of Pristine Sapphire Surfaces", THIN SOLID FILMS, Vol. 422, No. 1-2, pgs 135-140, 2000. (ABSTRACT ONLY)	
	D12	Fenner, D., et al., "Ion Beam Nanosmoothing of Sapphire and Silicon Carbide Surfaces", SPIE, Vol. 4468, pgs 17-24, 2001. (ABSTRACT ONLY)	
	E12	Blecha, Z., et al., "On Fabrication of Sapphire Substrates (1102) for Epitaxy of Monocrystalline Silicon", JEMNA MECHANIKA A OPTIKA, Vol., 28, No. 12, pgs 249-351, 1983. (ABSTRACT ONLY)	
	F12	Duffy, M., et al., "Optical Characterization of Silicon and Sapphire Surfaces as related to SOS Discrete Device Performance", JOURNAL OF CRYSTAL GROWTH, Vol. 58, No. 1, pgs 19-36, 1982. (ABSTRACT ONLY)	
	G12	Ehman, M., et al., "Mechanical Preparation of Sapphire Single-Crystal Surfaces by Vibratory Techniques", METALLOGRAPHY, Vol. 9, No. 4, pgs 333-339, 1976. (ABSTRACT ONLY)	
	H12	Druminiski, M., et al., "Deposition of Epitaxial Films on Spinel and Sapphire. Influence of Substrate Preparation", SIEMENS FORSCHUNGS - UND ENTWICKLUNGSBERICHTE, Vol. 5, No. 3, pgs 139-145, 1976. (ABSTRACT ONLY)	
	I12	Cullen, G., "The Preparation and Properties of Chemically Vapor Deposited Silicon on Sapphire and Spinel", JOURNAL OF CRYSTAL GROWTH, Vol. 9, pgs 107-125, 1971. (ABSTRACT ONLY)	
TS	J12	Liu, L., et al., "Substrates for Gallium Nitride Epitaxy", MAT. SCI. & ENG. REPORTS, Vol. R37, No. 3, pgs 61-127, 2000. (ABSTRACT ONLY)	

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TS	A13	Khattak, C., et al., "Production of Sapphire Blanks and Substrates for Blue LEDs and LDs", MAT. RES. SOC. SYMP. - PROCEEDINGS, V. 743, pgs 219-224, 2002. (ABSTRACT ONLY)	
	B13	Gutsche, H., et al., "Polishing of Sapphire with Colloidal Silica", JOURNAL OF THE ELECTROCHEMICAL SOCIETY, Vol. 125, No. 1, 1978, pgs 136-138, 1978. (ABSTRACT ONLY)	
	C13	Duffy, M., et al., "Semiconductor Measurement Technology: Method to Determine the Quality of Sapphire, (NOTE) Final Report", RCA Labs, 1980, 77 pgs. (ABSTRACT ONLY)	
	D13	Duffy, M., et al., "Method to Determine Quality of Sapphire, (NOTE) Interim Rept.", RCA Labs, 1975, 88 pgs. (ABSTRACT ONLY)	
	E13	Horie, S., et al., "Precision Grinding of Semiconductor - Related Materials", (JOURNAL) NEW DIAMOND, Vol. 20, No. 2, pgs 8-13, 2004. (ABSTRACT ONLY)	
	F13	Edgar, J., et al., "Substrates for Gallium Nitride Epitaxy", MAT. SCI. & ENG., PART R, Vol. R37, No. 3, pgs 61-127, 2002. (ABSTRACT ONLY)	
↓	G13	Author Unknown, "Specifications for Polished Monocrystalline Sapphire Substrates" 1996, Affiliation (Issuing Organization) SEMI Semiconductor Equipment & Materials International, USA. (Bibliographic Entry Only).	
TS	H13	Search Report for Technical Articles (Including various Abstracts of certain Identified References)	
	I13		
	J13		

Examiner Signature	/Timothy Speer/	Date Considered	06/28/2006
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